

## REMARKS

The applicant appreciates the Examiner's thorough examination of the application and requests reexamination and reconsideration of the application in view of the foregoing amendments. Also, the applicant incorporates herein the arguments included in the Response filed January 9, 2004, and additionally sets forth the following in support.

The applicant will address the two main points contained in the Examiner's Advisory Action. The applicant will discuss the Examiner's point regarding prior art structure. Then, the applicant will discuss the Examiner's point regarding the standard for combining references.

In the Advisory Action mailed March 26, 2004, the Examiner states in pertinent part that "in response to applicant's argument that *Sheen et al.* [does not teach] a processor operative to correlate a tag-modulated output signal, and first and second clamp-on transmitter receiver pairs configured to output tag-modulated signals, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art." The Examiner also states that "if the prior art structure is capable of performing the intended use, then it meets the claim".

First, amended claim 1 of the applicant's invention clearly claims a combination of structural components that are patentably distinguishable from the cited references, and that are not disclosed, taught or suggested by the cited references. Second, an obvious to try standard to analyze the claims would be improper. Third, functional language (if any) in a claim for a structure is not to be ignored as a distinguishing feature.

Particularly, the applicant claims the following structure including the following structural combination of elements:

a first clamp-on transmitter receiver pair configured to define a first ultrasonic signal path across fluid flowing in the conduit and to generate a

first tag-modulated output signal;

a second clamp-on transmitter receiver pair configured and mounted to define a second ultrasonic signal path anti-parallel to the first ultrasonic signal path and across fluid flowing in the conduit

said second ultrasonic signal spaced a fixed distance from said first ultrasonic signal path

said second clamp-on transmitter receiver pair further configured to generate a second tag-modulated output signal, and

a processor configured to correlate said first tag-modulated output signal of said first pair with said second tag-modulated output signal of said second pair to determine a time interval representative of flow.

To determine whether or not an invention is obvious, the claimed invention as a whole must be considered. Among other things, the applicant's claimed structural arrangement of structural components as a whole is not disclosed, taught or suggested by the cited references.

One of the advantageous results of the applicant's claimed anti-parallel tag flow measurement is reduction of cross-talk in the conduit. This use of antiparallel ultrasonic signal paths with tag flow measurement is unique and had not been done prior to the applicant's claimed invention. (The applicant's independent claim 8 recites similar elements. The applicant's independent claim 13 is a method claim also with elements distinguishable from the cited references in respects similar to those discussed below.) See, e.g., the specification at page 6, lines 9-10. In sharp contrast to the one of the principal cited references, *Donelan et al.*, where transducers are placed in the fluid to produce "anti-parallel" paths, and where cross-talk in the conduit is not a concern, the applicant's claimed first and second clamp-on transmitter receiver pairs are configured to define anti-parallel ultrasonic signal paths in a tag flow measurement system. As set forth in In re Antonie, 559 F.2d 618, 195 USPQ 6, 8 (CCPA 1977):

In determining whether the invention as a whole would have been obvious under 35 USC 103, we must first delineate the invention as a whole. In delineating the invention as a whole, we look not only to the subject matter which is literally recited in the claim in question ... but also to those

properties of the subject matter which are inherent in the subject matter *and* are disclosed in the specification ...

The PTO and the minority appear to argue that it would always be *obvious* for one of ordinary skill in the art *to try* varying every parameter of a system in order to optimize the effectiveness of the system even if there is no evidence in the record that the prior art recognized that particular parameter affected the result. As we have said many times, *obvious to try* is not the standard of 35 USC 103. (All emphasis in the original.)

The Antonie court proceeded to recognize that the parameter optimized by Antonie was not recognized to be a result-effective variable, and reversed the decision of the board.

There is no evidence that the cited references including *Donelan et al.* or *Sheen et al.* recognized that anti-parallel ultrasonic paths with clamp-on transmitter receiver pairs would result in reduction of cross-talk and enhanced signal-to-noise ratio. Without such evidence, all that is left is an “obvious to try” analysis. Such an analysis is contrary to law. See, e.g. In re Antonie, *supra*.

In this application, *inter alia*, the claimed flow measurement system includes the structural arrangement of structural elements (first and second clamp-on transmitter receiver pairs, etc.) that provide anti-parallel ultrasonic signal paths. As a result, there is a reduction of conduit cross-talk extending from one clamp-on transmitter to the receiver of the other pair, with enhanced signal-to-noise ratio. See, e.g. the specification at page 3, lines 25-28. Neither the applicant’s claimed structural arrangement of the transmitter receiver pairs nor this optimized result is taught or suggested by the cited references.

There is no evidence in the cited references that the applicant’s claimed structure and anti-parallel paths would optimize the effectiveness of such a measurement system. As noted by the applicant previously, *Donelan et al.* teaches anti-parallel paths between transducers in a fluid. There is no conduit cross-talk interfering with signals within the fluid within the conduit. Thus, *Donelan et al.* does not teach either the applicant’s claimed structure nor reduction of conduit cross-talk by the transmitter receiver pairs and their structural arrangement. *Sheen et al.* teaches elimination of

cross-talk by inserting a decoupler between pairs of transducers. Thus, *Sheen et al.* does not teach either the applicant's claimed structure nor reduction of conduit cross-talk by transmitter receiver pairs or their structural arrangement.

Notably also, there would be no motivation to one skilled in the art to modify *Donelan et al.* with *Sheen et al.* to eliminate cross-talk. *Donelan et al.* has no cross-talk because the transducers are in the fluid and signals are transferred within the fluid. *Sheen et al.* has already eliminated cross-talk by an ultrasonic decoupler. This will be discussed more fully below in the context of the standard for combining references. The combination of *Sheen et al.* and *Donelan et al.* serves as a major part of the basis of the Examiner's rejection of all of the applicant's independent claims.

Even if the Examiner is of the opinion that portions of the claims are functional, the Examiner is not allowed to delete functional elements of a claim before determining obviousness. See, e.g., In re Schreiber, 128 F.3d 1473, 44 USPQ 2d 1429, 1432 (Fed. Cir. 1997). According to Schreiber, if the Patent Office has a reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown in the prior art does not possess the characteristic relied on.

The applicant submits that it is insufficient and contrary to law for the Examiner to simply state that if the prior art structure is capable of performing the intended use, then it meets the claim. Such an analysis is the "obvious to try" analysis which has been rejected by the Federal Circuit. Moreover, the applicant has shown that any of the applicant's claimed "functionality" is not inherent in the cited references.

In the second aspect of the Advisory Action mailed March 26, 2004, the Examiner states in pertinent part that "the motivation [to combine the cited references] is found in the knowledge commonly available to one of ordinary skill in the art".

However, the applicant submits that this analysis is another form of an “obvious to try” analysis that has been rejected by the Federal Circuit.

[The cited] references disclose, at most, that one skilled in the art might find it obvious to try the claimed invention. But whether a particular combination might be “obvious to try” is not a legitimate test of patentability. See In re Fine, 837 F.2d 1071, 1075, 5 USPQ 2d 1596, 1599 (Fed. Cir. 1988).

The references cited in this application disclose and teach, at most, that one skilled in the art might find it obvious to try the claimed invention, and the deficiencies in the cited references cannot be overcome by invoking knowledge commonly available. As stated succinctly in In re Lee, 277 F.3d 1338, 61 USPQ 2d 1340, 1344 (Fed. Cir. 2002):

Deficiencies of the cited references cannot be remedied by the board’s general conclusions about what is “basic knowledge” or “common sense”.

It is not enough to simply identify elements in isolation, without considering the applicant’s invention as claimed as a whole. As stated in In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ 2d 1313, 1316 (Fed. Cir. 2000):

Most if not all inventions arise from a combination of old elements ... Thus, every element of a claimed invention may often be found in the prior art ... However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention.

Additionally, the applicant submits that it is not proper to ignore the specific teachings of cited references in order to find motivation to combine. As the applicant has explained herein and previously, the references cited by the Examiner to reject claims 1, 3-4, 8-10, 13 and 16-17, *inter alia*, teach away from each other and/or are not properly combinable.

One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. See In re Fine, *id.* at 1600 (Fed. Cir. 1988).

By way of further example, *Sheen et al.* teaches transmitting and receiving transducers on a pipe, the transmitting and receiving transducers located on opposite sides of the pipe, for transmitting signals into the pipe. In contrast, *Donelan et al.* teaches positioning transducers in the fluid, with the acoustic energy travelling upstream and downstream in the pipe between respective transmitters and receivers. See *Donelan et al.* column 2, lines 64-68 and column 4, lines 19-25. (Other reasons why *Donelan et al.* and *Sheen et al.* are not properly combinable are set forth in the applicant's Response filed January 9, 2004, and are incorporated herein by reference.)

Therefore, the applicant submits that it is improper and contrary to law to ignore the teachings of the cited references, pick isolated elements therefrom, designate them as knowledge generally available, and conclude that the combination claimed by the applicant is obvious.

Furthermore, to do so is to improperly engage in hindsight reconstruction. There must be a reason or suggestion in the art for selecting the procedure used, other than the knowledge learned from the applicant's disclosure. See In re Dow Chemical Company, 837 F.2d 469, 473, 5 USPQ 2d 1529, 1532 (Fed. Cir. 1989).

The applicant submits that there is no reason or suggestion in the cited references for the applicant's claimed invention, other than the knowledge learned from the applicant's disclosure.

Accordingly, for the foregoing reasons, the applicant requests that the Examiner reconsider the rejections, withdraw them, and allow the applicant's claims.


### CONCLUSION

Each of the Examiner's rejections has been addressed or traversed. Also, the applicant incorporates herein by reference pertinent arguments included in previous responses to the extent not all of those arguments are mooted in light of the Examiner's most recent rejections.

Accordingly, it is respectfully submitted that claims 1-11, 13-14 and 16-17 are in condition for allowance. Early and favorable action is respectfully requested.

If for any reason this Response is found to be incomplete, or if at any time it appears that a telephone conference with counsel would help advance prosecution, please telephone the undersigned or his associates, collect in Waltham, Massachusetts at (781) 890-5678.

Respectfully submitted,

  
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